

REF: 2269/TFCP/RemStrat/mjs

Gary Higginbottom
Bingham Rawlings
The Stables
1 Grosvenor Road
Wrexham LL11 1BS

9th December 2019

Dear Gary,

RE: TOTAL FITNESS CAR PARK: REMEDIATION STRATEGY

Geo-environmental Report

GSL prepared a Geo-environmental report for the above site, for Urban Developments Ltd (UDL), which was issued in September 2019. The initial remediation strategy is reproduced below for reference, with the latest development plan also attached.

The recommendations in this report should be reviewed once the development levels have been set.

However, it is envisaged that garden areas will be at the same elevation as the new car parking places, which will require excavation of the raised ground in the eastern section of the site.

The report has recommended that for Plots 1 and 2 the tarmac construction be removed and replaced to provide a suitable garden for the purchasers.

For Plots 3 to 6 the made ground will be removed down to the underlying natural ground and capped with a 200mm layer of imported topsoil.

It is possible that the Local Authority will request a detailed remediation strategy. This would include details on the following:

- *Provision of transportation dockets to confirm the made ground has been taken off site to a suitably licensed landfill site,*
- *Photographs of the works,*
- *Confirmation that clean material has been placed in garden areas,*
- *Hand dug trial pits to confirm the work has been carried out,*
- *Validation of topsoil prior to import.*

The site levels have now been set at 81.70m AOD, which is slightly above existing ground levels, confirming that final garden levels, will be at existing ground levels.

Subsequent to issue of this report WCBC have requested a full remediation strategy for the site development. This letter presents the remediation strategy and should be read in conjunction with the geo-environmental report.

Introduction

1. GroundSolve Ltd (GSL) have been instructed to provide details relating to the remediation strategy for the above contract.
2. The development on site will comprise two semi-detached properties (Plots 1 and 2) and four terraced residential properties (Plots 3 to 6), with associated gardens. The proposed site layout is indicated on the accompanying drawing.
3. GSL were appointed by UDL to undertake a desk study and site investigation at the site to enable the required Phase I and II investigation to be undertaken. This report has been submitted to Wrexham County Borough Council (WCBC) as part of the planning process.

Background

4. The site is situated at the northern end of the Total Fitness car park; approximately 800m to the north west of Wrexham Town centre, at National Grid Reference SH 330 513.
5. It is bounded to the east by housing and Mayville Avenue, and by a railway line that runs along the western site boundary. The Total Fitness car park, with the gym lies to the south of the site, whilst the recently completed Gower Homes development and access road lies to the north of the site.
6. The site can be divided into two sections, the western section is predominantly level and covered with tarmac, as it is currently used as a car park for the Total Fitness gym.
7. The edge of the car park is defined by a covered walkway, to the east of the walkway the ground level rises slightly and this area is grassed and partly enclosed by Heras fencing.
8. A topographical survey of the site, dated 2014 has been provided by the client, which confirms the site elevation for both sections of the site to be between 86.50 and 87.0mAOD.
9. The desk study failed to reveal any past site use apart from as a GPO depot. The only other site use has been as a car park for Total Fitness. Both uses are not considered to be contaminative.

10. The Geo-environmental Report identified slightly elevated contaminant concentrations, two values exceeded guidance values for residential land use with gardens, being Copper and Lead in TP2 at 0.50m depth.
11. Seven of the test values exceeded guidance values for residential land use with gardens, being Benz (a) anthracene in TP3, Benzo (a) pyrene, Benzo (b) fluoranthene and Dibenzo (a, h) anthracene in TP1 and TP3 both at depths of 0.50m. A PAH source analysis, revealed the PAH to be derived from Coal, Tar or creosote, probably associated with the underlying tarmac.
12. In addition, the asbestos screening revealed the presence of Chrysotile (white) asbestos in TP1 and TP2 at 0.50m depth. The samples were scheduled for a full asbestos quantification, with the results being between <0.001 and 0.002%.
13. The investigations have failed to reveal any visual or olfactory evidence of contamination, with the exception of tarmac.
14. However, the investigation has proved apart from car park construction, the presence of made ground on the eastern section of the site, which is likely to have been placed during the construction/demolition of the GPO building.
15. However, it will be necessary to remove the made ground on the eastern section of the site to get to grade, which will remove the made ground and any residual contamination.
16. In Plots 1 and 2 on the western side of the site, it will be necessary to remove the car park construction and provide a cover in the garden areas.
17. TP 1 revealed that the thickness of the car park construction was 0.60m, however, it was underlain by the previous car park construction for the GPO car park.
18. It is recommended that 600mm of the car park construction be excavated and replaced/capped with a 600mm thick cover system.
19. For Plots 3 to 6 the ground is mounded higher than the surrounding area. TP 2 identified 1.20m of made ground and previous car park construction.
20. All made ground is to be removed to the top of the underlying glacial till and the ground levels reinstated. The thickness of cover is not important as any residual contamination will have been removed. However, it is anticipated that the ground level will have to be reinstated by at least 600mm.
21. All materials imported to site should be subject to independent verification and validation to confirm these materials are suitable for re-use within a residential environment.
22. A remediation strategy is therefore required to address the risks from soil contamination.

23. Remediation measures will require verification and validation.

Source of Cover material

24. A source of clean material will need to be identified. Both subsoil and suitable topsoil for garden areas will be required.

Remediation Strategy: Soil

25. Remediation is not proposed in areas where buildings and hardstanding will be constructed. The presence of buildings and hard cover will effectively eliminate any pathway between the soil (source) and site occupiers (target).

26. Garden and landscaped areas should be covered with clean imported material and topsoil to isolate end-users from the underlying made ground.

27. Where made ground is to remain in place beneath garden or landscaped areas, I.e. beneath Plots 1 and 2 a minimum thickness of 600mm will need to be excavated and disposed of off-site. A capping layer, comprising a 400mm thick subsoil topped with 200mm imported topsoil should then be placed.

28. Beneath Plots 3 to 6 up to 1.20m of made ground will need to be removed to the underlying clean glacial till.

29. Where the made ground is removed in its entirety, a minimum topsoil thickness of 200mm will still be required to form suitable garden or landscaping areas, with clean imported subsoil used to make up the levels as required.

30. The suitability of the imported soil should be verified as follows:

- (i) Existing glacial till excavated for soakaway construction will be suitable as a cover material, but should be subject to inspection and validation testing on placing.
- (ii) All imported material must be obtained from a reputable source and the supplier should provide a certificate of analysis confirming the chemical and physical nature of the material.
- (iii) Independent analysis should be undertaken on the material after it has been imported to the site in order to confirm its chemical composition. Samples must be analysed in an accredited laboratory and results compared against the guideline criteria specified in the geo-environmental report.
- (iv) Based on the size of the development, testing should be carried out on at least one sample per material (i.e., both topsoil and subsoil) per two garden plots. These samples should be obtained from the material after importation to site. The sampling and

analysis regime should be agreed in advance with the contaminated land officer of WCBC.

31. The depth of cover achieved should be verified as follows:

- (i) In-situ testing of depth of cover (hand dug excavation). Hand dug excavation for confirmation of depth may be combined with obtaining samples for analysis.
- (ii) Photographs following the excavation of the made ground beneath Plots 3 to 6.
- (iii) Topographical survey of original site levels and reduced dig formation would also provide useful additional verification of depth of cover.

32. A watching brief should be carried out during development to manage any potential unforeseen areas of contamination. These may be identifiable by material type, colour or smell. The remediation of unforeseen areas of contamination should be determined depending on type and extent of contamination.

Validation: Soil

33. The remediation strategy should be supported by a Validation Report, which is to be produced following completion of the works.

34. The report should include details of material removed and imported to the site, results of chemical testing on imported soil, site plans and photographs.

35. Validation of soil remediation will be required as follows:

- (i) Suitability of material;
 - i. Evidence of source of material including transport dockets
 - ii. Suppliers certificates of chemical and physical analysis of material
 - iii. Certificates of independent analysis of material sampled from site
 - iv. Confirmation that the imported material is suitable for use
- (ii) Adequate thickness of cover
 - i. Scaled photographs of hand dug excavations in sufficient detail to show depth
 - ii. Trial pit log of material types and depths
 - iii. Original ground level and formation level survey data if available

36. The following additional material should also be incorporated into the validation report:

- (i) As built site layout clearly showing areas of buildings, hard cover and imported landscaping materials.
- (ii) Confirmation that no previously unforeseen, significant sources of contamination have been encountered.

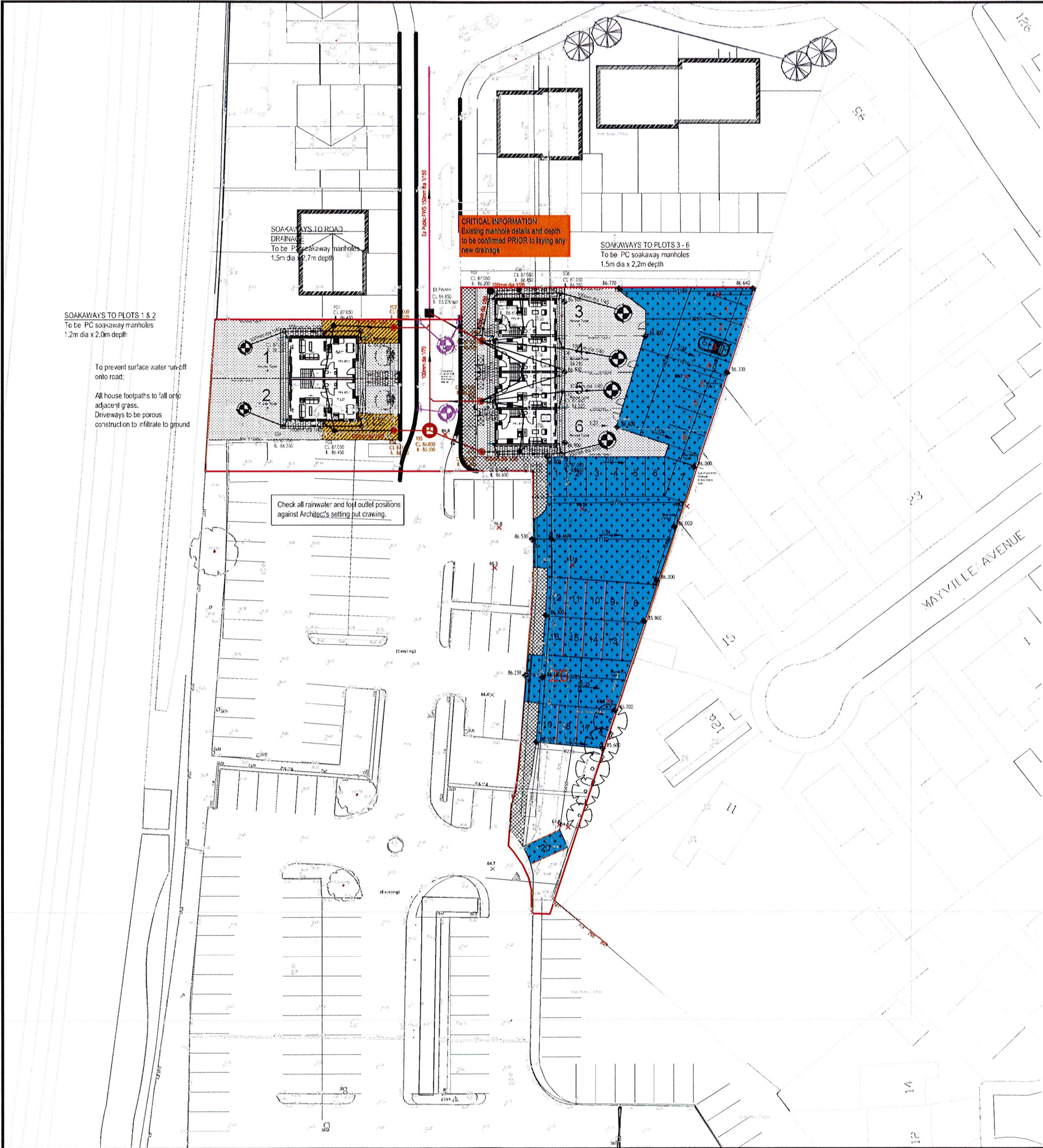
All works must be agreed in advance with the regulating Local Authority and all documentation submitted to them in respect of any relevant outstanding planning conditions.

We trust this is satisfactory, should you have further comments please call Mike Scott on 01244 661361.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'MJ Scott', written in a cursive style.

M J Scott



LEGEND

PROPOSED LEVELS

- SVP/SS /RWP
- Small Access Chamber
- Polypropylene Access chamber
- PC Manhole
- PC Soakaway
- 900mm deep road gully

Car Park Porous Surfacing
35mm thk SURFACE Course, Tarmac ULTIDRIVE Porous Asphalt 10mm Aggregate

60mm thk BINDER Course, Tarmac ULTIDRIVE Porous Asphalt 20mm Aggregate

225mm thk Tarmac ULTIFLOW Sub-base
on 1 Layer TERRAM 1000 or similar approved permeable geotextile.

Driveway Porous Surfacing
30mm thk SURFACE Course, Tarmac ULTIDRIVE Porous Asphalt 6mm Aggregate

60mm thk BINDER Course, Tarmac ULTIDRIVE Porous Asphalt 20mm Aggregate

225mm thk Tarmac ULTIFLOW Sub-base
on 1 Layer TERRAM 1000 or similar approved permeable geotextile.

GENERAL NOTES

All rainwater and foul outlet positions to be checked against Architect's setting out drawings.

Contractor is confirm, on site, all information given relating to existing services and drainage connections etc. prior to commencing the works and any discrepancies reported immediately to the engineer. Allow for hand dig around existing services where necessary.

Existing flows in watercourses, sewers and land drainage shall be maintained at all times during the works or handled accordingly.

All connections to existing public sewers are to be made to the satisfaction of the Sewerage Undertaker and the Local Authority.

Contractor is to obtain all highway authority consents and notices for excavations etc, prior to carrying out any offsite works.

All private drainage within the site is to comply with the requirements of BS EN 752: 2008 and the Building Regulations Approved Document H.

Unless noted otherwise all rain water connections are to be 100mm dia lead to minimum gradients 1:60 at head of run then 1:100

Unless noted otherwise all foul water connections are to be 100mm dia to minimum gradients 1:40 at head of run, then 1:80

Concrete protection of pipework is to be provided as follows:-

- i) All pipework within pedestrian / soft areas with cover less than 600mm.
- ii) All pipework beneath areas subject to vehicular overrun with cover less than 1.2m.
- iii) Pipes within 300mm of underside of slab to have concrete surround cast integral with slab.

Gradients of drains are indicative only and The Contractor shall install drains to the invert levels shown for each manhole.

FOUL WATER DRAINAGE ADOPTION NOTES

- The developer must self-vet and certify that the design criteria, material standards and workmanship specifications for the proposed adoptable sewers are in accordance with those set out in "Sewers for Adoption" 7th Edition and the requirements of DCWV as the Statutory Sewerage Undertaker, and the Welsh Ministers Build Standards.
 - For the FOUL connection to public sewer a Section 105 application to connect must be made to DCWW, the developer shall give 21 days notice prior to connection, the works may only be undertaken by a DCWW Health & Safety approved contractor.
 - Adoptable pipework to be either Marley Twinwall system or Polysewer Twinwall system as approved by DCWW
- Pipework installer must be accredited with the British Plastics Federation (BPF), plastic pipes group for such an installation. Please supply a copy of the Accreditation Certificate before any order is placed or work on site is commenced.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS DRAWINGS AND SPECIFICATIONS.

Revisions.				
Revision	Made by	Date	Checked	
A	SJ	07-10-19	GH	ISSUED FOR COMMENT & APPROVALS
Bingham Rowlings Partnership Limited Consulting Civil & Structural Engineers The Stables 1 Grosvenor Road Wrexham LL11 1BS Telephone: (01978) 353522 Fax: (01978) 355177 e-mail : consult@brp2000.co.uk				
brp Bingham Rowlings Partnership Limited				
Project		DEVELOPMENT OFF STANSTY ROAD WREXHAM		
Drawing title		Drainage & External Works Layout		
Architect		HBA DESIGNS		
Client		M/R N. CUNNINGHAM		
Scale		1:200		
Drawn		SGJ		
Date		09-09-2019		
Checked				
4097 EW01				Revision
				A